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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,970

04/13/2004

Hiroyuki Ogawa

AMD-AFO1215

5318

7590

07/13/2006

WAGNER, MURABITO & HAO LLP  
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EXAMINER

HOANG, QUOC DINH

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,970

Applicant(s)

OGAWA ET AL.

Examiner

Quoc D. Hoang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3 and 6-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 6-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/22/2006 has been entered.

### ***Response to Amendment***

2. Amendment filed on 06/22/2006 has been entered. Claims 2, 4, 5 and 9-15 have been canceled. Claims 1, 3 and 6-8 are pending in the application.

Applicants' remarks have been considered.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka., (US Pat No. 6,756,675) in view of Heim., (US Pat No. 5,248,903).

**Regarding claim 1**, Tanaka teaches a semiconductor device comprising:

a pad metal layer 100 having a perimeter area and a center area (col. 6, lines 20-67 and Fig. 1);

a lower metal layer 200 having a plurality of apertures 130a-130i below said center area of said pad metal layer 100, wherein said apertures 130a-130i are arranged into a plurality of rows each row comprising more than one of said apertures and a plurality of columns each column comprising more than one of said apertures(col. 6, lines 20-67 and Figs. 1-2A); and

an interlayer dielectric 150 formed between said pad metal layer 100 and said lower metal layer 200 (col. 6, lines 20-67 and Fig. 1).

a plurality of vias 110a-110d, 112a, 114a, 116a, 117a formed in said interlayer dielectric 150, wherein said vias electrically couple said pad metal layer 100 and said lower metal layer 200, and wherein said vias form a ring arrangement below said perimeter area of said pad metal layer 100 (col. 7, lines 30-45 and Figs. 2A-2B).

an protecting film 240 formed that covers said perimeter area of said pad metal layer 100 (col. 7, line 45 and Fig. 2B).

Tanaka teaches a plurality of vias (110a-110d, 112a, 114a, 116a, 117a) formed in the interlayer dielectric, but fails to teach wherein the vias form a ring arrangement only below the perimeter area of said pad metal layer. Also, Tanaka fails to teach the protect film is an insulating dielectric layer.

However, Heim teaches wherein the vias 212 form a ring arrangement only below the perimeter area of the pad metal layer 214, and the film 218 is an insulating dielectric layer (col. 3, line 53 through col. 4, line 57 and Figs. 2A-2B). Since Tanaka and Heim are all from the same field of endeavor, the purpose disclosed by Heim would have been recognized in the pertinent art of Tanaka. It would have been obvious to a

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person of ordinary skill in the art at the time of the invention was made to form the vias only below the perimeter area of the pad metal layer in order to reduce the bond pad lift off problem as taught by Heim, column 5, lines 5-13. Also, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made provide the an insulating dielectric layer on the perimeter area of the pad metal layer in order to define the contact area on the top surface of the metal pad layer as taught by Heim, column 4, lines 10-20.

**Regarding claim 3**, Tanaka teaches wherein said vias 110a-110d, 112a, 114a, 116a, 117a are filled with tungsten (col. 6, line 55).

**Regarding claim 6**, Tanaka teaches the bonding wire 180 is connected to the pad metal 100, but does not teach wherein **a probing process** is performed on said center area of said pad metal layer. Although the Tanaka does not teach wherein a probing process is performed on said center area of said pad metal layer, the present of the process limitations on product claims, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. In re Stephen 145 USPQ 656 (CCPA 1965).

**Regarding claim 7**, Tanaka teaches the bonding wire 180 is connected to the pad metal 100, but does not teach wherein **a wire-bonding process** is performed on said center area of said pad metal layer. Although the Tanaka does not teach wherein a wire-bonding process is performed on said center area of said pad metal layer, the present of the process limitations on product claims, which product does not otherwise

patentably distinguish over prior art, cannot impart patentability to the product. In re Stephen 145 USPQ 656 (CCPA 1965).


**Regarding claim 8**, Tanaka teaches wherein said semiconductor device is an integrated circuit chip (col. 11, line 28).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8.00 AM to 5.00 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone numbers of the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quoc Hoang  
Patent examiner/AU 2818

  
07/06/2006